

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Original) A control apparatus for a vehicle including an internal combustion engine capable of controlling an engine load, and a continuously variable transmission coupled to an output side of the internal combustion engine and capable of controlling an output speed of the internal combustion engine, the control apparatus comprising:

an exhaust purifying device disposed in an exhaust system of the internal combustion engine and operable to purify an exhaust gas while consuming a fuel; and

a controller that:

determines a first operating point at which a total fuel consumption amount is minimized as an optimal operating point, the total fuel consumption amount being obtained by adding an amount of a fuel consumed by the exhaust purifying device to an amount of a fuel consumed by the internal combustion engine for generating a required output; and

controls the engine load of the internal combustion engine and also controls a speed ratio of the continuously variable transmission so that the internal combustion engine operates at the optimal operating point.

2. (Original) The control apparatus according to claim 1, wherein the controller shifts the optimal operating point from the first operating point at which the total fuel consumption amount is minimized, to a second operating point on a higher-load, lower-speed side than the first operating point, or a third operating point on a lower-load, higher-speed side than the first operating point, depending upon an exhaust temperature of the internal combustion engine.

3. (Original) A control apparatus for a vehicle including an internal combustion engine capable of controlling an engine load, and a continuously variable transmission

coupled to an output side of the internal combustion engine and capable of controlling an output speed of the internal combustion engine, the control apparatus comprising:

an exhaust purifying device disposed in an exhaust system of the internal combustion engine and operable to purify an exhaust gas while consuming a fuel; and

a controller that:

when the exhaust purifying device is not effectively functioning, places the internal combustion engine in an operating state that enables generation of a required torque while giving higher priority to reduction in an amount of a pollutant in the exhaust gas than to reduction in a fuel consumption amount; and

when the exhaust purifying device is effectively functioning, places the internal combustion engine in an operating state that enables generation of a required torque while giving higher priority to reduction in the fuel consumption amount to reduction in the amount of the pollutant in the exhaust gas.

4. (Original) The control apparatus according to claim 3, wherein:

when the exhaust purifying device is not effectively functioning, the controller sets, as a target operating point of the internal combustion engine, a point on a line that connects operating points having substantially the same ratio of a rate of change in the fuel consumption amount to a rate of change in the amount of the pollutant in the exhaust gas in a direction along an equi-output line of the internal combustion engine; and

when the exhaust purifying device is effectively functioning, the controller sets, as the target operating point, an operating point that is set based on an operating point at which a total fuel consumption amount is minimized, the total fuel consumption amount being obtained by adding an amount of a fuel consumed by the exhaust purifying device to an amount of a fuel consumed by the internal combustion engine for generating a required output.

5. (Original) A control apparatus for a vehicle including an internal combustion engine capable of controlling an engine load, and a continuously variable transmission coupled to an output side of the internal combustion engine and capable of controlling an output speed of the internal combustion engine, wherein the internal combustion engine is operated at an operating point defined by the engine load and the output speed, the control apparatus comprising:

a controller that:

sets, as a target operating point, an operating point selected from a plurality of operating points corresponding to a plurality of outputs of the engine, each of the plurality of operating points having substantially the same ratio of a rate of change in the fuel consumption amount to a rate of change in the amount of the pollutant in the exhaust gas, which ratio is obtained when an operating state of the engine is changed with an output of the engine being kept constant; and

places the internal combustion engine in an operating state represented by the target operating point set for a required output of the engine.

6. (Original) A control apparatus for a vehicle including an internal combustion engine capable of controlling an engine load, and a continuously variable transmission coupled to an output side of the internal combustion engine and capable of controlling an output speed of the internal combustion engine, wherein the internal combustion engine is operated at an operating point defined by the engine load and the output speed, the control apparatus comprising:

a controller that:

sets, as a target operating point, an operating point on a line on which an amount of a pollutant contained in an exhaust gas is substantially constant with respect to each output of the engine, when the internal combustion engine is in a low output state in

which the amount of the pollutant emitted is equal to or smaller than a predetermined reference value; and

places the internal combustion engine in an operating state represented by the target operating point set for a required output of the engine.

7. - 12. (Canceled)

13. (Original) A method of controlling a vehicle including an internal combustion engine capable of controlling an engine load, and a continuously variable transmission coupled to an output side of the internal combustion engine and capable of controlling an output speed of the internal combustion engine, wherein an exhaust purifying device is disposed in an exhaust system of the internal combustion engine and is operable to purify an exhaust gas while consuming a fuel, comprising the steps of:

determining a first operating point at which a total fuel consumption amount is minimized as an optimal operating point, the total fuel consumption amount being obtained by adding an amount of a fuel consumed by the exhaust purifying device to an amount of a fuel consumed by the internal combustion engine for generating a required output; and

controlling the engine load of the internal combustion engine and also controlling a speed ratio of the continuously variable transmission so that the internal combustion engine operates at the optimal operating point.

14. - 17. (Canceled)

18. (Original) A method of controlling a vehicle including an internal combustion engine capable of controlling an engine load, and a continuously variable transmission coupled to an output side of the internal combustion engine and capable of controlling an output speed of the internal combustion engine, wherein the internal combustion engine is operated at an operating point defined by the engine load and the output speed, comprising the step of:

setting, as a target operating point, an operating point on a line on which an amount of a pollutant contained in an exhaust gas is substantially constant with respect to each output of the engine, when the internal combustion engine is in a low output state in which the amount of the pollutant emitted is equal to or smaller than a predetermined reference value.

19. - 24. (Canceled)